SUBCHAPTER 2.4

TRANSPORTATION/TRAFFIC

2.4 Transportation/Traffic

The following summary of transportation and circulation impacts is based on the Traffic Impact Analysis (TIA) for Sugarbush Subdivision prepared by Linscott, Law & Greenspan, Engineers (LLG), dated April 17, 2009. The TIA is included as Appendix F of this EIR.

2.4.1 Existing Conditions

A total of 9 roadway segments and 10 intersections was evaluated in the traffic analysis. The Project site is situated at the southern terminus of Sugarbush Drive. Buena Creek Road, located to the north of the site, connects to I-15 to the east via Deer Springs Road, and to SR 78 to the southwest via South Santa Fe Drive and Robelini Drive. Figure 2.4-1, Existing Roadway Conditions, depicts the existing roadway network, with a brief description provided below.

Existing Roadway Characteristics

Buena Creek Road is identified as a Major Road on the County Circulation Element. It is a winding two-lane roadway from South Santa Fe Avenue in the County to North Twin Oaks Valley Road in the City. Buena Creek Road currently does not have shoulders and has a general cross-section width of 26 feet. Curbside parking is generally not allowed, and the posted speed limit ranges from 40 to 50 miles per hour (mph) due to the winding nature of the roadway.

Sycamore Avenue/Robelini Drive is a winding two-lane Collector Street from the SR 78 interchange to South Santa Fe Avenue within the County limits and a six-lane divided roadway within City of Vista limits. Sycamore Avenue is identified as a Major Road on the County Circulation Element. Robelini Drive is identified as a Collector Road. The northerly segment of Sycamore Avenue continues north from Lobelia Drive as a two-lane street named Robelini Drive. Curbside parking is generally not allowed, and the posted speed limit along Robelini Drive is 25 mph.

South Santa Fe Avenue is classified as a Major Road on the County's Circulation Element. S. Santa Fe Avenue is currently constructed as a two-lane undivided roadway providing one lane of travel per direction. Curbside parking is prohibited and the posted speed limit is 45 mph.

Deer Springs Road is classified as a Major Road on the County's Circulation Element. Deer Springs Road is currently constructed as a two-lane roadway with no parking in the Project area. The shoulders are unimproved. Deer Springs Road has both horizontal and vertical curves, and rural characteristics. Within the Project area, the posted speed limit is 45 mph with no bike lanes present.

Sugarbush Drive is an unclassified two-lane roadway serving a few residential homes. Sugarbush Drive does not provide shoulders and has a cross-section width of 40 feet. Curbside parking is generally permitted and the prima facie speed is 25 mph.

Monte Vista Drive is classified as a Major Road on the County's Circulation Element. Monte Vista Drive is currently constructed as a two-lane undivided roadway. Monte Vista Drive does not provide shoulders and has a cross-section width of 26 feet. Curbside parking is prohibited and the posted speed is 45 mph.

Twin Oaks Valley Road is classified as a Major Road north of Borden Road, and as a Prime Arterial south of Borden Road on the County's Circulation Element. Twin Oaks Valley Road is currently constructed as a two-lane undivided roadway with a two-way left-turn lane and a 45 mph posted speed limit from Buena Creek Road to Cassou Road. From Cassou Road to La Cienega Road, the roadway is constructed as a four-lane divided roadway with a raised median and a 45 mph posted speed limit.

Existing Levels of Service

Level of service (LOS) designations comprise a professional industry standard by which the operating condition of a given roadway segment or intersection is measured. LOS is defined using letter designations from "A" to "F," wherein LOS A represents the best operating conditions and LOS F represents the worst operating conditions (Table 2.4-1a, Level of Service Thresholds for Roadway Segments; Table 2.4-1b, Level of Service Thresholds for Signalized Intersections; and Table 2.4-1c, Level of Service Thresholds for Unsignalized Intersections). LOS A facilities are characterized as having free-flowing traffic conditions with no restrictions on maneuvering or operating speeds; traffic volumes are low and travel speeds are high. LOS F facilities are characterized as having highly unstable, congested conditions and low operating speeds. LOS E and F generally are not accepted for urban design purposes.

The volume-to-capacity ratio (V/C) is a measure of traffic demand (expressed as volume; V) compared to its traffic-carrying capacity (C). In this case, the street segments were analyzed by comparing the daily traffic volume (ADT) to the County of San Diego Average Daily Vehicle Trips Table and the City of San Marcos Roadway Classification Table. In evaluating the performance of a roadway segment under the existing conditions, V/C is considered together with LOS.

Existing peak hour intersection turning movement and segment volume counts were conducted in March 2009. Some counts conducted in July 2008 are also used. Some of the 2008 traffic counts are considered less-than-average volumes. In order to determine the proper seasonal variation factor to apply, LLG reviewed historical summer and non-summer volumes on Deer Springs Road. The comparison yielded a volume on Deer Springs Road during non-summer periods that was approximately 10 percent higher than during summer periods; therefore, the existing summertime peak hour traffic volumes were increased by 10 percent. The "factored-up" existing traffic volumes are used in the traffic analysis. Table 2.4-2, Existing Traffic Volumes, summarizes the ADT, while Figure 2.4-2, Existing Traffic Volumes, depicts the ADT and a.m./p.m. peak hour turning movement volumes at the key study area intersections.

Daily Street Segment Levels of Service

Table 2.4-3, Existing Segment Operations, shows that the following segments are calculated to currently operate at LOS E or worse conditions:

- South Santa Fe Avenue from Robelini Drive to Buena Creek Road (LOS F)
- South Santa Fe Avenue from Buena Creek Road to Smilax Road (LOS E)
- North Twin Oaks Valley Road from Buena Creek Road to La Cienega Road (LOS F)
- Robelini Drive from South Santa Fe Avenue to University Drive (LOS E)
- Deer Springs Road from North Twin Oaks Valley Road to I-15 (LOS F)

Peak Hour Intersection Levels of Service

Table 2.4-4, Existing Intersection Operations, summarizes the existing operations at the key study area intersections. All study area intersections are calculated to currently operate at LOS D or better during both the a.m. and p.m. peak hours.

Intersection Sight Distance

All traffic from the Project site accesses off-site locales via the intersection of Sugarbush Drive and Buena Creek Road, which is unsignalized. The posted speed limit is 45 mph. Recorded 85th percentile speeds recorded over a 24-hour period on July 16, 2009, however, were 55.3 mph on the eastbound approach and 57.3 mph on the westbound approach to the intersection.

A sight distance analysis was conducted at this intersection. The current sight distance is approximately 480 feet toward the east and 280 feet toward the west. The County's Standard Corner Sight Distance at Intersections (County 1999) lists the minimum sight distance at the recorded 85th percentile speeds as 553 feet on the eastbound approach and 573 feet on the westbound approach.

Railroad Track Crossings

The Project site is located in proximity to the North County Transit District's "Sprinter" railroad line. In particular, two roadways in the traffic study area cross the railroad tracks. The railroad track crossing of Buena Creek Road is located approximately 40 feet from South Santa Fe Avenue/Buena Creek Road intersection. The railroad track crossing on South Santa Fe Avenue is located approximately 1,700 feet west of Robelini Drive.

2.4.2 Analysis of Project Effects and Determination as to Significance

The Project study area includes facilities within the jurisdiction of the County, the City of San Marcos and the City of Vista. This analysis applies County criteria to the intersections and segments within the County's jurisdiction, and the applicable city's criteria to the intersections and segments within its jurisdiction.

2.4.2.1 *Project Trip Generation*

Table 2.4-5, Proposed Project Trip Generation, summarizes the Proposed Project's traffic generation. The Proposed Project is calculated to generate approximately 540 ADT with 43 trips (13 inbound/30 outbound) during the a.m. peak hour and 54 trips (38 inbound/16 outbound) during the p.m. peak hour. The current General Plan designation for this site is Estate 17, which requires that lots must be a minimum of two or four acres, depending upon slope. If the average slope is 25 percent or less, two-acre lots are permitted; four-acre lots are required if the slope is greater than 25 percent. Based on the slope analysis prepared for the Proposed Project (Appendix B, Slope Analysis, of Appendix C to this EIR), a total of 47 lots could potentially be allowed under the current General Plan designation. As the potential number of lots is two more than the number being proposed by the Project, the GPA associated with the Proposed Project would not result in an increase in traffic generation beyond the current General Plan designation.

2.4.2.2 *Project Traffic Distribution*

The traffic anticipated to be generated by the Proposed Project was distributed and assigned to the street system based on Project access, the characteristics of the roadway system, the proximity of the project to SR 78, and potential employment, retail and educational opportunities. Slightly more than half of the trips are expected to utilize Buena Creek Road to the west since that route is the most direct to SR 78 and I-15. It also provides access to retail opportunities. Figure 2.4-3, Regional Traffic Distribution, depicts the estimated Project traffic distribution in the site environs. The assignment of Project traffic to the surrounding circulation system was based on the estimated distribution and is shown in Figure 2.4-4, Proposed Project Traffic Volumes. Figure 2.4-5, Existing Plus Project Traffic Volumes, depicts the anticipated traffic volumes with the addition of the traffic generated by the Proposed Project.

2.4.2.3 *Existing Plus Project Roadway Segment Impacts*

Guidelines for the Determination of Significance

The following threshold is applied to the analysis of transportation/traffic impacts within areas under County jurisdiction.

1. Traffic volume and/or level of service traffic impacts on a road segment are considered significant if:

   a. The additional or redistributed ADT generated by a project would cause an adjacent or nearby County Circulation Element Road to operate below LOS D;

   b. The additional or redistributed ADT generated by the project would cause a residential street to exceed its design capacity; and/or

   c. The additional or redistributed ADT generated by the project would significantly increase congestion (as identified in Threshold Matrix 1 below) on a County Circulation Element Road, or State Highway currently operating at LOS E or LOS F.

Threshold Matrix 1
Allowable Increases on Congested Road Segments
(County of San Diego)

Los	2-Lane Road	4-Lane Road	6-Lane Road
E	200 ADT	400 ADT	600 ADT
F	100 ADT	200 ADT	300 ADT

Notes:

- By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
- The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

The following threshold is applied to the analysis of transportation/traffic impacts within the cities of San Marcos and Vista.

2. A significant impact to a City of San Marcos or City of Vista roadway segment will be identified if the threshold identified in Threshold Matrix 2 is exceeded.

Threshold Matrix 2 City of San Marcos and City of Vista Traffic Impact Significance Thresholds						
Level of Service with Project[a]	**Allowable Increase Due to Project Impacts [b]**					
	Freeways		**Roadway Segments**		**Intersections**	**Ramp Metering**
	V/C	**Speed (mph)**	**V/C**	**Speed (mph)**	**Delay (sec.)**	**Delay (min.)**
E & F (*or ramp meter delays above 15 minutes*)	0.01	1	0.02	1	2	2

Footnotes:

a. All level of service measurements are based upon Highway Capacity Manual (HCM; Transportation Research Board [TRB] 2000) procedures for peak-hour conditions; however, V/C ratios for roadway segments may be estimated on an ADT/24-hour traffic volume basis. The acceptable LOS for freeways, roadways and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. Ramp meter delays above 15 minutes, however, are considered excessive.

b. If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are deemed to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigations (within the TIS) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note a above), or if the project adds a significant amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.

General Notes:

1. V/C = Volume to Capacity Ratio
2. Speed = Arterial speed measured in miles per hour
3. Delay = Average stopped delay per vehicle measured in seconds for intersections, or minutes for ramp meters.
4. LOS = Level of Service

Guideline No. 1 is based on the County's Guidelines for Determining Significance – Transportation and Traffic (December 5, 2007). Guideline No. 2 is based on the San Diego Traffic Engineers' Council (SANTEC) and the Institute of Transportation Engineers (ITE – California Border Section) guidelines for the determination of significance, as implemented by the cities of Vista and San Marcos.

Analysis

Table 2.4-6, Near-term Segment Operations, shows that with the addition of Proposed Project traffic, five of the nine street segments in the study area are anticipated to continue to operate at LOS E or F on a daily basis, as follows:

- South Santa Fe Avenue from Robelini Drive to Buena Creek Road (LOS F)
- South Santa Fe Avenue from Buena Creek Road to Smilax Road (LOS E)
- North Twin Oaks Valley Road from Buena Creek Road to La Cienega Road (LOS E)
- Robelini Drive from South Santa Fe Avenue to University Drive (LOS E)
- Deer Springs Road from North Twin Oaks Valley Road to I-15 (LOS E)

Despite the failing operation of the above-listed segments, most are not considered direct Project impacts per County or City of San Marcos guidelines, because the Project contribution would not exceed the thresholds contained in Threshold Matrices 1 and 2. The Proposed Project would, however, contribute 240 ADT to two two-lane roads currently operating at LOS E or F: the additional traffic loading would constitute **direct and significant impacts** to two roadway segments. **(Impact TR-1)**

- South Santa Fe Avenue from Robelini Drive to Buena Creek Road (LOS F)

- Robelini Drive from South Santa Fe Avenue to University Drive (currently operating at LOS E, degrades to LOS F)

2.4.2.4 *Existing Plus Project Intersection Impacts*

Guidelines for the Determination of Significance

The following thresholds are applied to the analysis of transportation/traffic impacts in the County.

3. A project will result in a significant volume and/or level of service traffic impact on a signalized intersection if:

   a. The additional or redistributed ADT generated by the proposed project would cause a signalized intersection to operate below LOS D; and/or

   b. The additional or redistributed ADT generated by the proposed project would significantly increase congestion (as identified in Threshold Matrix 3 below) on a signalized intersection currently operating at LOS E or LOS F.

Threshold Matrix 3
Allowable Increases in Vehicle Trips Entering Congested Intersections
(County of San Diego)

LOS	Signalized	Unsignalized
E	Delay of 2 seconds	20 peak hour trips on a critical movement
F	Delay of 1 second, or 5 peak hour trips on a critical movement	5 peak hour trips on a critical movement

Notes:
1. A critical movement is one that is experiencing excessive queues.
2. By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine whether total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
3. The County may also determine impacts have occurred on a road even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

4. A project will result in a significant volume and/or level of service traffic impact on an unsignalized intersection if:

   a. The additional or redistributed ADT generated by the proposed project would add 20 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate below LOS D;

   b. The additional or redistributed ADT generated by the proposed project would add 20 or more peak hour trips to a critical movement of an unsignalized intersection and the unsignalized intersection currently operates at LOS E;

   c. The additional or redistributed ADT generated by the proposed project would generate five or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at F;

d. The proposed project would generate five or more peak hour trips to a critical movement of an unsignalized intersection and the unsignalized intersection currently operates at LOS F; or

e. Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance and/or other factors, it is found that a generation rate less than those specified above would significantly impact the operations of the intersection.

The following threshold is applied to the analysis of transportation/traffic impacts within the City of San Marcos and City of Vista.

5. A significant impact to a City of San Marcos or City of Vista intersection would occur if the threshold identified in Threshold Matrix 2 is exceeded.

Guideline Nos. 3 and 4 are based on the County's Guidelines for Determining Significance – Transportation and Traffic (December 5, 2007). Guideline No. 5 is based on the SANTEC/ITE guidelines, as implemented by the cities of Vista and San Marcos.

Analysis

Table 2.4-7, Near-term Intersection Operations, illustrates that with the addition of Proposed Project traffic, all study area intersections are calculated to operate at LOS D or better during both the a.m. and p.m. peak hours except the Buena Creek Road/Monte Vista Drive intersection, which is calculated to operate at LOS E during the p.m. peak hour. The impact to this intersection is considered a **direct and significant impact**. (**Impact TR-2)**

2.4.2.5 *Traffic Hazards Due to Design Feature*

Guidelines for the Determination of Significance

6. A significant traffic hazard will occur if a project would:
   a. Include a design feature or physical configuration of an access road that may adversely affect the safe transport of vehicles along the roadway.
   b. Result in a percentage and/or magnitude of increased traffic on the road that would affect the safety of the roadway.
   c. Result in physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping, or other barriers that may result in vehicle conflicts with other vehicles or stationary objects.
   d. Not conform to the requirements of the private or public road standards, as applicable.

Guideline No. 6 is based on the County's Guidelines for Determining Significance – Transportation and Traffic (December 5, 2007).

Analysis

As previously stated, a sight distance analysis was conducted at the Proposed Project access point to Buena Creek Road. Sight distances currently are approximately 480 feet towards the east and 280 feet towards the west from Sugarbush Drive. With the proposed vegetation removal, grading, and retaining wall installation (refer to Figure 1-2), the sight distances would be increased to the required 553 feet on

the eastbound approach and 573 feet on the westbound approach. This distance would exceed the minimum needed for the current 85th percentile speeds.

As described in Section 2.4.1, the railroad track crossing of Buena Creek Road is located approximately 40 feet from the South Santa Fe Avenue/Buena Creek Road intersection, allowing only a maximum of two cars to queue in the available distance. Vehicles back up beyond the railroad tracks under existing conditions. The addition of the Project traffic, therefore, would not cause traffic to back up to the railroad crossing at Buena Creek Road.

The eastbound queue at Robelini Drive with Project traffic is calculated to be 325 feet and with the addition of cumulative projects would 400 feet. This is substantially less than the 1,700 feet available between the crossing and the South Santa Fe Avenue/Robelini Drive intersection. Therefore, the Project would not cause the traffic to back up to the railroad crossing on South Santa Fe Avenue.

No impacts related to traffic hazards as a result of Project design features would occur as a result of Project development.

During the temporary construction period, a Project-related impact would occur along Buena Creek Road where the sewer line upgrade would require jacking and boring for the line to meet the existing main within roadbed. The process pushes pipe through soil along a pre-determined horizontal alignment by drilling horizontally rather than trenching. Although generally subsurface, the process does require pits at either end of the bore for access. The pit near Buena Creek Road would be open for approximately three-to-five days. The water pipeline would be installed via routine trenching and also would tie in to an existing manhole in Buena Creek Road near the junction of that road with Cleveland Trail. The need for traffic control during this brief period is identified as a short-term, but **significant impact**. **(Impact TR-3)**

2.4.3 Cumulative Impact Analysis

A total of 132 other development projects have been identified within the Traffic cumulative study area that would contribute to area traffic over the long term, along with the Proposed Project (refer to Table 1-2 and Figure 1-8). Each project has the potential to contribute vehicle trips and traffic impacts to the same road segments and intersections as those evaluated in the Proposed Project traffic analysis. Traffic anticipated to be generated by these projects is detailed in Table 2.4-8. Figure 2.4-6, Existing Plus Project Plus Cumulative Traffic Volumes, depicts the modeled future cumulative traffic conditions.

2.4.3.1 *Existing Plus Cumulative Projects Plus Project Roadway Segment Impacts*

Table 2.4-6, Near-term Segment Operations, shows that with the addition of cumulative projects traffic, the following segments are calculated to continue to operate at LOS E or worse conditions:

- Buena Creek Road from South Santa Fe Avenue to North Twin Oaks Valley Road (LOS F)
- South Santa Fe Avenue from Robelini Drive to Buena Creek Road (LOS F)
- South Santa Fe Avenue from Buena Creek Road to Smilax Road (LOS E)
- Monte Vista Drive from Robin Place to Buena Creek Road (LOS E)
- North Twin Oaks Valley Road from Buena Creek Road to La Cienega Road (LOS F)
- Robelini Drive from South Santa Fe Avenue to University Drive (LOS F)
- Deer Springs Road from North Twin Oaks Valley Road to I-15 (LOS F)

The additional traffic loading on each of these roadway segments as a result of the identified cumulative projects would exceed the allowable increases on congested road segments as shown in Threshold Matrix 1 (for the County) or 2 (for Vista and San Marcos). The Proposed Project would contribute traffic to each of these roadways and therefore would contribute to **significant cumulative impacts** to each of the above-listed segments. **(Impact TR-4)**

As shown in Table 2.4-9, Near-term Intersection Lane Volume Operations, with the addition of cumulative projects traffic, the SR 78/Sycamore Avenue westbound and eastbound ramps interchange is calculated to operate near capacity during the a.m. peak hour; the SR 78/Sycamore Avenue westbound and eastbound ramps interchange is calculated to operate over capacity during the p.m. peak hour; and the I-15/Deer Springs southbound and northbound ramps are calculated to operate over capacity during the a.m. and p.m. peak hours.

Table 2.4-7, Near-term Intersection Operations, shows that, with the addition of cumulative project traffic, the following intersections are calculated to operate at LOS E or worse conditions:

- SR 78/Sycamore Avenue Eastbound Ramps (LOS E during the a.m. peak hour)
- Buena Creek Road/Monte Vista Drive (LOS E during the a.m. peak hour and LOS F during the p.m. peak hour)
- Buena Creek Road/Sugarbush Drive (LOS F during the p.m. peak hour)
- Buena Creek Road/North Twin Oaks Valley Road (LOS F during the a.m. and p.m. peak hours)
- Deer Springs Road/North Twin Oaks Valley Road (LOS F during the a.m. and p.m. peak hours)
- Deer Springs Road/I-15 Southbound interchange (LOS F during the a.m. and p.m. peak hours)

The additional traffic loading at each of these intersections as a result of the identified cumulative projects would exceed the allowable increases at congested intersections as shown on Threshold Matrix 2 (for Vista and San Marcos) or 3 (for the County). The Proposed Project would contribute traffic to each of these intersections and therefore would contribute to **significant cumulative impacts** to each of the above-listed intersections. **(Impact TR-5)**

An analysis was conducted to determine whether a traffic signal would be warranted at the intersection of Buena Creek Road and Sugarbush Drive. The forecasted traffic volume on Sugarbush Drive is a maximum of 38 trips during the peak hour, of which 13 trips are right-turns and would not need a traffic signal to enter Buena Creek Road. The minimum peak hour traffic volume that would warrant a traffic signal based on the Manual of Uniform Traffic Control Devices Warrant 3 is 75 trips (see Appendix F). The volumes are, therefore, well below the amount that would warrant a traffic signal.

2.4.3.3 *Cumulative Traffic Hazards*

As described in detail in Section 2.4.2.5 above, the Proposed Project would conform with County sight distance standards. This conclusion would remain unchanged under cumulative conditions. Cumulative traffic hazard impacts would be **less than significant** following Project implementation.

2.4.4 Significance of Impacts Prior to Mitigation

Prior to mitigation and under current roadway conditions, the Proposed Project would result in significant direct and cumulative impacts to a number of roadway and state route segments and intersections.

2.4.4.1 *Direct Impacts*

Impact TR-1 Under Existing Plus Project conditions, direct impacts would occur on the following roadway segments:

a. South Santa Fe Avenue from Robelini Drive to Buena Creek Road
b. Robelini Drive from South Santa Fe Avenue to University Drive

Impact TR-2 Under Existing Plus Project conditions, direct impacts would occur at the following intersection:

a. Buena Creek Road/Monte Vista Drive

Impact TR-3 During Project construction, direct impacts to traffic flow would occur where water and sewer lines join existing mains in Buena Creek Road.

2.4.4.2 *Cumulative Impacts*

Impact TR-4 Under Existing Plus Cumulative Projects Plus Project conditions, the Proposed Project would contribute to significant cumulative impacts to the following seven roadway segments:

a. Buena Creek Road from South Santa Fe Avenue to North Twin Oaks Valley Road
b. South Santa Fe Avenue from Robelini Drive to to Smilax Road
c. Monte Vista Drive from Robin Place to Buena Creek Road
d. North Twin Oaks Valley Road from Buena Creek Road to La Cienega Road
e. Robelini Drive from South Santa Fe Avenue to University Drive
f. Deer Springs Road from North Twin Oaks Valley Road to I-15

Impact TR-5 Under Existing Plus Cumulative Projects Plus Project conditions, the Proposed Project would contribute to significant cumulative impacts to the following six intersections:

a. SR 78/Sycamore Avenue Eastbound Ramps
b. Buena Creek Road/Monte Vista Drive
c. Buena Creek Road/Sugarbush Drive
d. Buena Creek Road/North Twin Oaks Valley Road
e. Deer Springs Road/North Twin Oaks Valley Road
f. Deer Springs Road/I-15 Interchange

2.4.5 Mitigation

Mitigation measures proposed to address Project-specific impacts as well as the Project contribution to cumulative impacts are identified below.

M-TR-1 Direct impacts to Robelini Drive and South Santa Fe Avenue shall be mitigated as follows:

a. and b. The Project Applicant shall extend the northbound right-turn lane on Robelini Drive at South Santa Fe Avenue from the current 130 feet in length to 260 feet in length.

M-TR-2 Direct impacts to the Buena Creek Road/Monte Vista Drive intersection shall be mitigated as follows:

a. The Project Applicant shall provide a dedicated right-turn lane on Buena Creek Road at Monte Vista Drive to the satisfaction of the County of San Diego.

M-TR-3 Direct impacts to Buena Creek Road during connection of Project water and sewer lines to existing mains in the roadway shall be mitigated as follows:

a. Prior to commencement of pipeline installation work, a Traffic Control Plan for Buena Creek Road shall be prepared and approved by the County.

M-TR-4 Existing Plus Cumulative Plus Project impacts to roadway segments shall be mitigated as follows:

a. The Project Applicant shall participate in the County's Traffic Impact Fee (TIF) program to mitigate impacts to the portion of Buena Creek Road within the County. The Project Applicant shall provide payment toward the City of San Marcos PFF fee program to mitigate impacts to the portion of Buena Creek Road in the City of San Marcos.

b. The Project Applicant shall participate in the County's TIF program to mitigate impacts to South Santa Fe Avenue.

c. Cumulative impacts to the Monte Vista Drive segment will be mitigated through implementation of M-TR-2, above.

d. The Project Applicant shall provide payment toward the City of San Marcos PFF fee program to mitigate impacts to Twin Oaks Valley Road (Capital Improvement Projects [CIP] Projects 78, 87 and 88).

e. Cumulative impacts to Robelini Drive will be mitigated through implementation of M-TR-1 and through participation in the County's TIF program.

f. The Project Applicant shall participate in the County's TIF program to mitigate impacts to the portion of Deer Springs Road within the County. The Project Applicant shall provide payment toward the City of San Marcos PFF fee program to mitigate impacts to the portion of Deer Springs Road (CIP Project 78) in the City of San Marcos.

M-TR-5 Existing Plus Cumulative Plus Project impacts to intersections shall be mitigated as follows:

a. The Project Applicant shall contribute a fair share towards the City of Vista's planned restriping of the SR 78/Sycamore Avenue eastbound ramps intersection to change the middle lane to a shared thru/right/left-turn lane.

b. Cumulative impacts to the Buena Creek Road/Monte Vista Drive intersection will be mitigated through implementation of M-TR-2, above.

c. The Project Applicant shall construct a 150-foot long westbound left-turn lane (with a 120-foot bay taper) on Buena Creek Road at Sugarbush Drive.

d. The Project Applicant shall provide payment toward the City of San Marcos PFF fee program to mitigate impacts to Twin Oaks Valley Road at the Buena Creek Road intersection.

e. The Project Applicant shall provide payment toward the City of San Marcos PFF fee program to mitigate impacts to Twin Oaks Valley Road at the Deer Springs Road intersection.

f. The Project Applicant shall participate in the County's TIF program to mitigate impacts to the I-15/Deer Springs Road interchange intersection.

2.4.6 Conclusion

Development of the Proposed Project would result in potentially significant direct and cumulative traffic impacts to a number of study area road segments and intersections. The mitigation measures proposed above would mitigate all direct Project-related effects to roadway segments and intersections (through improvement to an acceptable LOS) to below a level of significance. Cumulative impacts would be mitigated through fair-share contributions (i.e., participation in the County's TIF Program, City of San Marcos PFF fee program, or fair-share contribution to planned City of Vista improvements) or, alternatively, through direct completion of selected intersection improvements.

To mitigate direct impacts to the roadway segments (South Santa Fe Avenue from Robelini Drive to Buena Creek Road and Robelini Drive from South Santa Fe Avenue to University Drive), the project proposes to complete improvements to the South Santa Fe Avenue/Robelini Drive intersection (M-TR-1). Doubling of the northbound right-turn length on Robelini Drive would reduce delays at the intersection and, in turn, decrease the travel time along the adjacent roadway segments. This reduction in travel time is verified by conducting an arterial analysis, which determines the average speed on the subject segment. Table 2.4-10 summarizes the calculations for the two applicable roadway segments. As seen in the tables, the travel time on the subject segments would be less with the Proposed Project traffic and intersection improvements than under existing conditions. The segment impacts would, therefore, be mitigated to below a level of significance with the implementation of the recommended intersection mitigation measures.

To mitigate direct impacts to intersections, the Project proposes to complete intersection improvements (M-TR-2). Improvements to the Buena Creek Road/Monte Vista Drive intersection would reduce intersection overall delay (wait time), resulting in improved intersection LOS. The proposed improvements would allow the intersection to operate at acceptable levels, thereby appropriately mitigating the impact.

To mitigate potential temporary effects associated with traffic flow in the vicinity of the Buena Creek Road and Cleveland Trail intersection during installation of water and sewer pipelines, a Traffic Control Plan would be developed. This Plan would ensure that any necessary flagging or direction be provided to drivers in order to avoid the construction area.

In addition to the mitigation measures for direct Project impacts described above, mitigation for cumulative segment impacts would consist of payment into the County of San Diego TIF program or City of San Marcos PFF fee program (M-TR-4). These programs were specifically designed to address cumulative issues (i.e., those impacts not great enough on a project level to require mitigation, but which, when combined with the incremental adverse effects of other area-wide projects, reach a level of impact requiring mitigation). Required improvements are specified and funds are collected from projects coming on line in order to defray costs of those improvements when implemented. Since these programs were

designed to address cumulative concerns and the associated appropriate payment for specified improvements, participation in these programs constitutes effective and adequate mitigation for this issue. With participation in these programs, the Proposed Project would reduce cumulative roadway segment impacts to below a level of significance.

Cumulative impacts to the Buena Creek Road/Sugarbush Drive intersection would be mitigated through construction of a 150-foot long westbound left-turn lane on Buena Creek Road at Sugarbush Drive. The proposed improvements would allow the intersection to operate at acceptable levels, thereby appropriately mitigating the impact (M-TR-5.c). In addition to this improvement and the intersection improvement designed to mitigate Project direct impacts at the Buena Creek Road/Monte Vista Drive intersection, mitigation for cumulative impacts would consist of payments into the County of San Diego TIF program, City of San Marcos PFF fee program, or City of Vista planned projects (M-TR-5). As described above, these programs were designed to address cumulative concerns. With participation in these programs, the Proposed Project would reduce cumulative intersection impacts to below a level of significance.

Table 2.4-1a
LEVELS OF SERVICE THRESHOLDS FOR ROADWAY SEGMENTS

			Level of Service				
Street Classification	**Lanes**	**Cross Sections**	**A**	**B**	**C**	**D**	**E**
Freeway	8 lanes		60,000	84,000	120,000	140,000	150,000
Freeway	6 lanes		45,000	63,000	90,000	110,000	120,000
Freeway	4 lanes		30,000	42,000	60,000	70,000	80,000
Expressway	6 lanes	102/122	30,000	42,000	60,000	70,000	80,000
Prime Arterial	6 lanes	102/122	25,000	35,000	50,000	55,000	60,000
Major Arterial	6 lanes	102/122	20,000	28,000	40,000	45,000	50,000
Major Arterial	4 lanes	78/98	15,000	21,000	30,000	35,000	40,000
Collector	4 lanes	72/92	10,000	14,000	20,000	25,000	30,000
Collector (no center lane) (continuous left-turn lane)	4 lanes 2 lanes	64/84 50/70	5,000	7,000	10,000	13,000	15,000
Collector (no fronting property)	2 lanes	40/60	4,000	5,500	7,500	9,000	10,000
Collector (commercial-industrial fronting)	2 lanes	50/70	2,500	3,500	5,000	6,500	8,000
Collector (multi-family)	2 lanes	40/60	2,500	3,500	5,000	6,500	8,000
Sub-Collector (single-family)	2 lanes	36/56	__	__	2,200	__	__

Table 2.4-1b
LEVEL OF SERVICE THRESHOLDS FOR SIGNALIZED INTERSECTIONS

Average Control Delay Per Vehicle (Seconds/Vehicle)	**Level of Service**
0.0 ≤ 10.0	A
10.1 to 20.0	B
21.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.0	F

Table 2.4-1c
LEVEL OF SERVICE THRESHOLDS FOR UNSIGNALIZED INTERSECTIONS

Average Control Delay Per Vehicle (Seconds/Vehicle)	Level of Service	Expected Delay to Minor Street Traffic
0.0 ≤ 10.0	A	Little or no delay
10.1 to 15.0	B	Short traffic delays
15.1 to 25.0	C	Average traffic delays
25.1 to 35.0	D	Long traffic delays
35.1 to 50.0	E	Very long traffic delays
≥ 50.0	F	Severe congestion

Table 2.4-2
EXISTING TRAFFIC VOLUMES

Street Segment	ADT	Date
Buena Creek Road		
S. Santa Fe Avenue to Sugarbush Drive	10,300	Mar 2009
Sugarbush Drive to N. Twin Oaks Valley Road	8,400	Mar 2009
S. Santa Fe Avenue		
Robelini Drive to Buena Creek Road	16,900	June 2009
Buena Creek Road to Smilax Road	11,000	Mar 2009
Monte Vista Drive		
Robin Place to Buena Creek Road	7,900	July 2008
Sugarbush Drive		
South of Buena Creek Road	200	Mar 2009
N. Twin Oaks Valley Road		
Deer Springs Road to La Cienega Road	18,200	Mar 2008
Robelini Drive		
S. Santa Fe Avenue to University Drive	14,900	Jul 2008
Deer Springs Road		
N. Twin Oaks Valley Road to I-15	14,600	Mar 2009

Source: Appendix F

Table 2.4-3
EXISTING SEGMENT OPERATIONS

Segment	Jurisdiction	Existing Roadway Class [a]	LOS E Capacity [b]	Existing		
				Vol.	LOS	V/C
Buena Creek Road						
S. Santa Fe Ave to Sugarbush Dr	County	Rural Collector	16,200	10,300	D	0.64
Sugarbush Dr to N. Twin Oaks Valley Rd	County, San Marcos	Rural Collector	16,200	8,400	D	0.52
S. Santa Fe Avenue						
Robelini Dr to Buena Creek Rd	County	Rural Collector	16,200	**16,900**	**F**	**1.04**
Buena Creek Rd to Smilax Rd	County	Rural Collector	16,200	**11,000**	**E**	**0.68**
Monte Vista Drive						
Robin Pl to Buena Creek Rd	County	Rural Collector	16,200	7,900	D	0.49
Sugarbush Drive						
S. of Buena Creek Rd	County	Residential Street [c]	1,500	200	C	0.13
N. Twin Oaks Valley Road [d]						
Buena Creek Rd to La Cienega Rd	San Marcos	Rural Collector	15,000	**18,200**	**F**	**1.12**
Robelini Drive						
S. Santa Fe Ave to University Dr	County, Vista	Rural Collector	16,200	**14,900**	**E**	**0.92**
Deer Springs Road						
N. Twin Oaks Valley Rd to I-15	San Marcos, County	Rural Collector	16,200	**14,600**	**F**	**0.90**

Source: Appendix F

Footnotes:

a. Existing Roadway Classification.
b. County of San Diego, Average Daily Vehicle Trips.
c. Level of service does not apply to residential streets since their primary purpose is to serve abutting lots and not serve as through streets.
d. Located within the City of San Marcos. Hence, City of San Marcos Average Roadway Levels of Service Table utilized.
e. **Bold** indicates LOS E or worse operations

Table 2.4-4
EXISTING INTERSECTION OPERATIONS

Intersection	Jurisdiction	Control Type	Peak Hour	Existing	
				Delay[a]	LOS
1. SR 78 / Sycamore Avenue EB Ramps	Vista/Caltrans	Signal	a.m.	51.1	D
			p.m.	24.0	C
2. SR 78 / Sycamore Avenue WB Ramps	Vista/Caltrans	Signal	a.m.	26.2	C
			p.m.	36.0	D
3. Robelini Drive / S. Santa Fe Avenue	County	Signal	a.m.	23.3	C
			p.m.	23.6	C
4. Buena Creek Road / S. Santa Fe Avenue	County	Signal	a.m.	16.0	B
			p.m.	23.2	C
5. Buena Creek Road / Monte Vista Drive	County	AWSC[b]	a.m.	20.6	C
			p.m.	34.5	D
6. Buena Creek Road / Sugarbush Drive	County	TWSC[c]	a.m.	13.7	B
			p.m.	17.1	C
7. Buena Creek Road / N. Twin Oaks Valley Road	San Marcos	Signal	a.m.	19.0	B
			p.m.	23.2	C
8. Deer Springs Road / N. Twin Oaks Valley Road	San Marcos	Signal	a.m.	12.6	B
			p.m.	9.9	A
9. Deer Springs Road / Interstate 15 SB Ramps	County/Caltrans	Signal	a.m.	25.6	C
			p.m.	28.9	C
10. Deer Springs Road / Interstate 15 NB Ramps	County/Caltrans	Signal	a.m.	22.2	C
			p.m.	44.4	D

Source: Appendix F

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. AWSC – All-Way Stop Controlled intersection.
c. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

Signalized Thresholds		Unsignalized Thresholds	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

Table 2.4-5
PROPOSED PROJECT TRIP GENERATION

Land Use	Size		Daily Trip Ends		AM Peak Hour					PM Peak Hour				
			Rate	ADT	% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
							In	Out	Total			In	Out	Total
Estate Homes	45	DU	12/DU[b]	540	8%	30:70	13	30	43	10%	70:30	38	16	54

Source: Appendix F

Table 2.4-6
NEAR-TERM SEGMENT OPERATIONS

Segment	Jurisdiction	Existing Roadway Class [a]	LOS E Cap [b]	Existing			Existing + Project			Project Traffic	Existing + Project + Cumulative Projects			Impact Type
				Vol.	LOS	V/C	Vol.	LOS	V/C		Vol.	LOS	V/C	
Buena Creek Road														
S. Santa Fe Ave to Sugarbush Dr	County	Rural Col	16,200	10,300	D	0.64	10,600	D	0.65	300	**18,400**	**F**	**1.14**	**Cumulative**
Sugarbush Dr to N. Twin Oaks Val Rd	County, San Marcos	Rural Col	16,200	8,400	D	0.52	8,620	D	0.53	220	**21,450**	**F**	**1.32**	**Cumulative**
S. Santa Fe Avenue														
Robelini Dr to Buena Creek Rd	County	Rural Col	16,200	**16,900**	**F**	**1.04**	**17,140**	**F**	**1.06**	**240**	**24,260**	**F**	**1.5**	**Direct & Cumulative**
Buena Creek Rd to Smilax Rd	County	Rural Col	16,200	**11,000**	**E**	**0.68**	**11,050**	**E**	0.68	50	**11,050**	**E**	**0.68**	**Cumulative**
Monte Vista Drive														
Robin Pl to Buena Creek Rd	County	Rural Col	16,200	7,900	D	0.49	7,930	D	0.49	30	**12,800**	**E**	**0.79**	**Cumulative**
Sugarbush Drive														
S. of Buena Creek Rd	County	Res Street	1,500	200	C	0.13	740	C	0.49	540	740	C	0.49	None
N. Twin Oaks Valley Road														
Buena Creek Rd to La Cienega Rd	San Marcos	Town Col.	19,000	**18,200**	**E**	**0.96**	**18,360**	**E**	0.96	160	**28,590**	**F**	**1.50**	**Cumulative**
Robelini Drive														
S. Santa Fe Ave to University Dr	County, Vista	Rural Col	16,200	**14,900**	**E**	**0.92**	**15,140**	**E**	**0.93**	**240**	**21,340**	**F**	**1.32**	**Direct & Cumulative**
Deer Springs Road														
N. Twin Oaks Valley Rd to I-15	San Marcos, County	Rural Col	16,200	**14,600**	**F**	**0.90**	**14,650**	**E**	0.90	50	**42,390**	**F**	**2.62**	**Cumulative**

Source: Appendix F

Footnotes:

a. Existing Roadway Classification.
b. County of San Diego, Average Daily Vehicle Trips.
c. Level of service does not apply to residential streets since their primary purpose is to serve abutting lots and not serve as through streets. Level of service normally applies to roads carrying through traffic between major trip generators and attractors.

Table 2.4-7
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Jurisdiction	Control Type	Peak Hour	Existing		Existing + Project		Δ Delay / Project Volume	Existing + Project + Cumulative Projects		Impact Type
				Delay[a]	LOS [b]	Delay[a]	LOS [b]		Delay[a]	LOS [b]	
1. SR 78 / Sycamore Ave EB Ramps	Vista/Caltrans	Signal	a.m.	51.1	D	53.4	D	NA	**72.4**	**E**	**Cumulative**
			p.m.	24.0	C	24.2	C	NA	39.6	D	**Cumulative**
2. SR 78 / Sycamore Ave WB Ramps	Vista/Caltrans	Signal	a.m.	26.2	C	26.5	C	NA	28.2	C	None
			p.m.	36.0	D	36.3	D	NA	47.1	D	None
3. Robelini Dr / S. Santa Fe Ave	County	Signal	a.m.	23.3	C	23.4	C	NA	30.1	C	None
			p.m.	23.6	C	23.7	C	NA	29.7	C	None
4. Buena Creek Rd / S. Santa Fe Ave	County	Signal	a.m.	16.0	B	16.1	B	NA	33.0	C	None
			p.m.	23.2	C	24.1	C	NA	48.9	D	None
5. Buena Creek Rd / Monte Vista Dr	County	AWSC[c]	a.m.	20.6	C	22.6	C	NA	**41.5**	**E**	**Cumulative**
			p.m.	34.5	D	**40.2**	**E**	**5.7**	**>100.0**	**F**	**Direct & Cumulative**
6. Buena Creek Rd / Sugarbush Dr	County	TWSC[d]	a.m.	13.7	B	15.9	C	NA	30.6	D	None
			p.m.	17.1	C	19.8	C	NA	**54.4**	**F**	**Cumulative**
7. Buena Creek Rd / N. Twin Oaks Valley Rd	San Marcos	Signal	a.m.	19.0	B	19.6	B	NA	**83.8**	**F**	**Cumulative**
			p.m.	23.2	C	23.6	C	NA	**>100.0**	**F**	**Cumulative**
8. Deer Springs Rd / N. Twin Oaks Valley Rd	San Marcos	Signal	a.m.	12.6	B	12.6	B	NA	**>100.0**	**F**	**Cumulative**
			p.m.	9.9	A	9.9	A	NA	**>100.0**	**F**	**Cumulative**
9. Deer Springs Rd / I-15 SB Ramps	County/Caltrans	Signal	a.m.	25.6	C	25.7	C	NA	**90.4**	**F**	**Cumulative**
			p.m.	28.9	C	29.0	C	0.7	**>100.0**	**F**	**Cumulative**
10. Deer Springs Rd / I-15 NB Ramps	County/Caltrans	Signal	a.m.	22.2	C	22.2	C	NA	**100.0**	**F**	**Cumulative**
			p.m.	44.4	D	44.4	D	NA	**>100.0**	**F**	**Cumulative**

Source: Appendix F

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. AWSC – All-Way-Stop-Controlled intersection.

Bold indicates significant impact

N/A = Not applicable

Signalized		Unsignalized	
Thresholds		Thresholds	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

Table 2.4-8
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

	Cumulative Project	Rate	Unit	Daily	AM Peak Hour		PM Peak Hour	
					In	Out	In	Out
1	Kirkorowicz TPM	10 /DU	2 DU	20	0	1	1	1
2	Kuehn, Garrett	10 /DU	2 DU	20	0	1	1	1
3	Polo Club	10 /DU	165 DU	1,650	40	92	116	50
4	Biernacki TPM	10 /DU	2 DU	20	0	1	1	1
5	Collins, Gary	10 /DU	3 DU	30	1	2	2	1
6	Brisa Del Mar	10 /DU	22 DU	220	5	12	15	7
7	Mustafa TPM	10 /DU	4 DU	40	1	2	3	1
8	Goodnight Ranchos, TPM	10 /DU	2 DU	20	0	1	1	1
9	Robinson TPM	10 /DU	4 DU	40	1	2	3	1
10	Gagavalli TPM	10 /DU	2 DU	20	0	1	1	1
11	Cal-a-Vie	[a]	[a]	800	32	32	40	40
12	Tran Tentative Parcel Map	12 /DU	5 DU	60	1	3	4	2
13	Castle Creek	8 /DU	63 DU	504	11	25	27	23
14	McBride TPM	10 /DU	2 DU	20	0	1	1	1
15	Tapestry Meadows	[a]	[a]	40	3	1	2	2
16	Fitzpatrick TPM	10 /DU	4 DU	40	1	2	3	1
17	Woodhead Minor Residential	12 /DU	4 DU	48	1	3	3	2
18	The Oaks	12 /DU	11 DU	132	3	7	9	4
19	Odell	12 /DU	2 DU	24	1	1	2	-
20	Beauvias TM	10 /DU	7 DU	70	2	4	5	2
21	Wilkes Road TPM	12 /DU	5 DU	60	1	3	4	2
22	National Quarries	[b] [b]	[b] [b]	[b]	[b]	[b]	[b]	[b]
23	Canyon Hills	[c]	[c]	334	1	1	1	0
24	Brooks & Kiersey Driveway	12 /DU	12 DU	144	3	8	10	4
25	Champagne Gardens	[b] [b]	[b] [b]	8,360	8,360	[b]	54	333
26	Welcome View	12 /DU	2 DU	24	1	1	2	-
27	Garden Villas	8 /DU	148 DU	1,184	25	58	64	54
28	Rim Rock	10 /DU	172 DU	1,720	41	96	120	52
29	Charles Froehlich TM	10 /DU	6 DU	60	1	3	4	2
30	The Vineyards Specific Plan	10 /DU	59 DU	590	14	33	41	18
31	Foothill Oak Elementary	[e] [e]	[e] [e]	[e]	[e]	[e]	[e]	[e]
32	Craftsman Condominiums	8 /DU	42 DU	336	7	16	18	15
33	Grandview Road 13-Lot Residential Subdivision	10 /DU	13 DU	130	3	7	9	4
34	Twin Oaks Valley Water Treatment Plant	[a]	[a]	200	11	5	5	11

Table 2.4-8 (cont.)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

	Cumulative Project	Rate	Unit	Daily	AM Peak Hour		PM Peak Hour	
					In	Out	In	Out
35	Merriam Mountains Specific Plan	Varies	2,320 DU	35,518	758	1,600	2,232	1,303
36	Villas on the Green	10 /DU	210 DU	2,100	50	118	147	63
37	Raisigel/ Fejeran	12 /DU	4 DU	48	1	3	3	2
38	Hidden Meadows II	10 /DU	854 DU	8,540	205	478	598	256
39	Paradigm	12 /DU	125 DU	1,500	36	84	105	45
40	Rancho Minerva	1.6 /Student	1200 Students	1,920	307	307	86	86
41	San Clemente TSM	10 /DU	5 DU	50	1	3	4	2
42	Meadows 35	12 /DU	4 DU	48	1	3	3	2
43	Rimmelspach Subdivision	10 /DU	6 DU	60	1	3	4	2
44	Black TM	12 /DU	11 DU	132	3	7	9	4
45	Piro/Ciba TMs	12 /DU	6 DU	72	2	4	5	2
46	Choi TM	12 /DU	8 DU	96	2	5	7	3
47	Arend Brouwer	12 /DU	4 DU	48	1	3	3	2
48	Hidden Meadows	12 /DU	4 DU	48	1	3	3	2
49	Washington Meadows	12 /DU	12 DU	144	3	8	10	4
50	Monte Vista Drive TSM	10 /DU	8 DU	80	2	4	6	2
51	Monte Vista Drive 8-Lot TSM	10 /DU	21 DU	210	5	12	15	6
52	Vista Irrigation Pipeline Access	e	e	a	a	a	a	a
53	Plamondon TPM/Emma Estates	12 /DU	3 DU	36	1	2	3	1
54	Via Conca D'Oro Residential	10 /DU	6 DU	60	1	3	4	2
55	Merriam West Ranch	12 /DU	33 DU	396	10	22	28	12
56	Twin Oaks Farm	a	a	a	a	a	a	a
57	Rimsa TM	12 /DU	2 DU	24	1	1	2	-
58	TERI	[c]	[c]	596	154	32	0	122
59	Pizzuto	12 /DU	3 DU	36	1	2	3	1
60	Heritage Valley Estates	12 /DU	10 DU	120	3	7	8	4
61	Mountain Gate	10 /DU	138 DU	1,380	33	77	97	41
62	Hannalei Elementary	[e] [e]	[e] [e]	e	e	e	e	e
63	Tai Estates	10 /DU	13 DU	130	3	7	9	4
64	Leese Properties							
65	Kawano Subdivision	10 /DU	9 DU	90	2	5	6	3
66	Fredas Hill	10 /DU	13 DU	130	3	7	9	4
67	Casa de Amparo Group Care Facility	[c]	[c]	416	29	26	28	30
68	Sycamore/ Cox	10 /DU	18 DU	180	4	10	13	5
69	Walnut Grove Park	5 /Acre	26 Acres	130	5	5	7	7
70	Discovery Valley Equestrian & Canine Center	[b]	[b]	b	64	35	53	78

Table 2.4-8 (cont.)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Cumulative Project		Rate	Unit	Daily	AM Peak Hour		PM Peak Hour	
					In	Out	In	Out
71	Lantis Minor Subdivision	10 /DU	3 DU	30	1	2	2	1
72	San Marcos Highlands	10 /DU	230 DU	2,300	55	129	161	69
73	Malone Street	10 /DU	14 DU	140	3	8	10	4
74	Del Roy Drive (aka Dove Glen)	10 /DU	36 DU	360	9	20	25	11
75	Mulberry	10 /DU	33 DU	330	8	18	23	10
76	Kachy	10 /DU	9 DU	90	2	5	6	3
77	Richland Estates	10 /DU	3 DU	30	1	2	2	1
78	Roger Estate	10 /DU	4 DU	40	1	2	3	1
79	Orchard Hills GPA	10 /DU	27 DU	270	6	15	19	8
80	Jack Biery	10 /DU	6 DU	60	1	3	4	2
81	Reidy Creek	1.6 /Student	850 Students	1,360	218	218	61	61
82	Innovative Communities	10 /DU	34 DU	340	8	19	24	10
83	Larry Templeton	10 /DU	5 DU	50	1	3	4	2
84	Cornerstone Engineering	10 /DU	14 DU	140	3	8	10	4
85	Hidden Valley Ranch (aka Hallmark)	10 /DU	179 DU	1,790	43	100	125	54
86	Rincon Escondido	10 /DU	38 DU	380	9	21	27	11
87	Windy Way Residential	10 /DU	39 DU	390	9	22	27	12
88	Mulberry/Rose Ranch	10 /DU	96 DU	960	23	54	67	29
89	Rose Ranch	10 /DU	83 DU	830	20	46	58	25
90	Meadowbrook Village	[b]	225 DU	690	17	18	33	26
91	BHA Inc	10 /DU	19 DU	190	5	11	13	6
92	RMCI Group	10 /DU	16 DU	160	4	9	11	5
93	Merit Group	10 /DU	10 DU	100	2	6	7	3
94	Cornerstone Engineering	10 /DU	32 DU	320	8	18	22	10
95	Palomar College – San Marcos Master Plan	1.53 /FTE [e]	3,229 Students	4,940	396	99	218	178
96	Mission Road	10 /DU	119 DU	1,190	29	67	83	36
97	Glendale	10 /DU	83 DU	830	20	46	58	25
98	Windy Way Industrial	80 /KSF	11,233 SF	899	89	10	22	86
99	Woodward/ Borden Condos	8 /DU	56 DU	448	9	22	24	21
100	Vineyard/ Shirley	10 /DU	19 DU	190	5	11	13	6
101	Proposed Fire Station #3	/Location	1 Station	-	-	-	-	-
102	Tract 868	6 /DU	5 DU	30	1	2	2	1
103	River Village Apartments	8 /DU	123 DU	984	21	48	53	45
104	Residence Inn	10 /Room	112 Rooms	1,120	40	27	54	36
104	Palomar Station	[a]	[a]	7,301	179	198	382	335
105	Liberty Drive	10 /DU	3 DU	30	1	2	2	1

Table 2.4-8 (cont.)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Cumulative Project		Rate	Unit	Daily	AM Peak Hour		PM Peak Hour	
					In	Out	In	Out
106	Liberty Lane	10 /DU	39 DU	390	9	22	27	12
107	Richmar Avenue Retail	40 /KSF	26,553 SF	1,062	51	34	53	53
109	Mission and Vineyard Retail Center	120 /KSF	38 KSF	4,560	109	73	228	228
110	Vineyard	10 /DU	7 DU	70	2	4	5	2
111	Hollandia Project			1,217	170	73	49	73
112	Mountain Meadow TM	10 /DU	11 DU	110	3	6	8	3
113	Premier Coastal Development	8 /DU	70 DU	560	12	27	30	26
114	Civic Center Marketplace	[a]	[a]	9,012	425	127	396	585
115	Civic Center Plaza	40 /KSF	18.01 KSF	720	13	9	32	32
116	Civic View Corporate Center	20 /KSF	99.5 KSF	1,990	251	28	52	207
117	Campus Pointe Office Building	17 /KSF	112 KSF	1,904	223	25	53	213
118	High Tech High	[a]	[a]	1,184	214	117	72	134
119	Park Place South	[a]	[a]	1,050	74	13	33	89
120	San Marcos Creek Specific Plan	[a]	[a]	63,929	2,089	1,348	3144	3358
121	University Medical and Office Park	[a]	[a]	31,700	2,241	414	1,010	2,764
122	Kaiser Permanente	25 /KSF	690 KSF	17,250	966	414	690	1,035
123	University District Specific Plan	[d] [d]	[d] [d]	114,697	4,203	2,767	5,460	6,289
124	Urban West Strategies	[a]	[a]	1,328	56	26	56	73
125	CSUSM – Phase II	1.43 /FTE [b]	4,893 FTE	7,017	442	49	196	365
126	Hansen Aggregate	10 /DU	300 DU	3,000	72	168	210	90
127	Palomar College – Fallbrook	0.55 /Student[d]	8,500 Students	4,675	388	80	391	123
128	West Lilac Farms	10 /DU	28 DU	280	7	16	20	8
129	University Heights Specific Plan	[a]	[a]	11,804	233	653	798	372
TOTAL CUMULATIVE PROJECT TRAFFIC				**383,905**	**23,813**	**11,294**	**18,977**	**20,102**

Source: Appendix F
Footnotes:
a. Information not available. ADT and peak hour traffic only are available.
b. Upon completion, project does not generate any traffic
c. Projects are completed and the traffic generated is included in the existing traffic.
d. Rates and trips obtained from RBF
e. Rates based on existing counts conducted at the campus by LLG.

Table 2.4-9
NEAR-TERM INTERSECTION LANE VOLUME OPERATIONS

Intersection	Peak Hour	Existing		Existing + Project		Existing + Project + Cumulative Projects	
		ILV / Hour	Capacity	ILV / Hour	Capacity	ILV / Hour	Capacity
SR 78/Sycamore Ave WB & EB Ramps	AM PM	>1200 & <1500 >1200 & <1500	Near Near	>1200 & <1500 >1200 & <1500	Near Near	>1200 & <1500 **>1500**	Near **Over**
I-15 / Deer Springs SB & NB Ramps	AM PM	<1500 **>1500**	Under **Over**	<1500 **>1500**	Under **Over**	**>1500** **>1500**	**Over** **Over**

Source: Appendix F

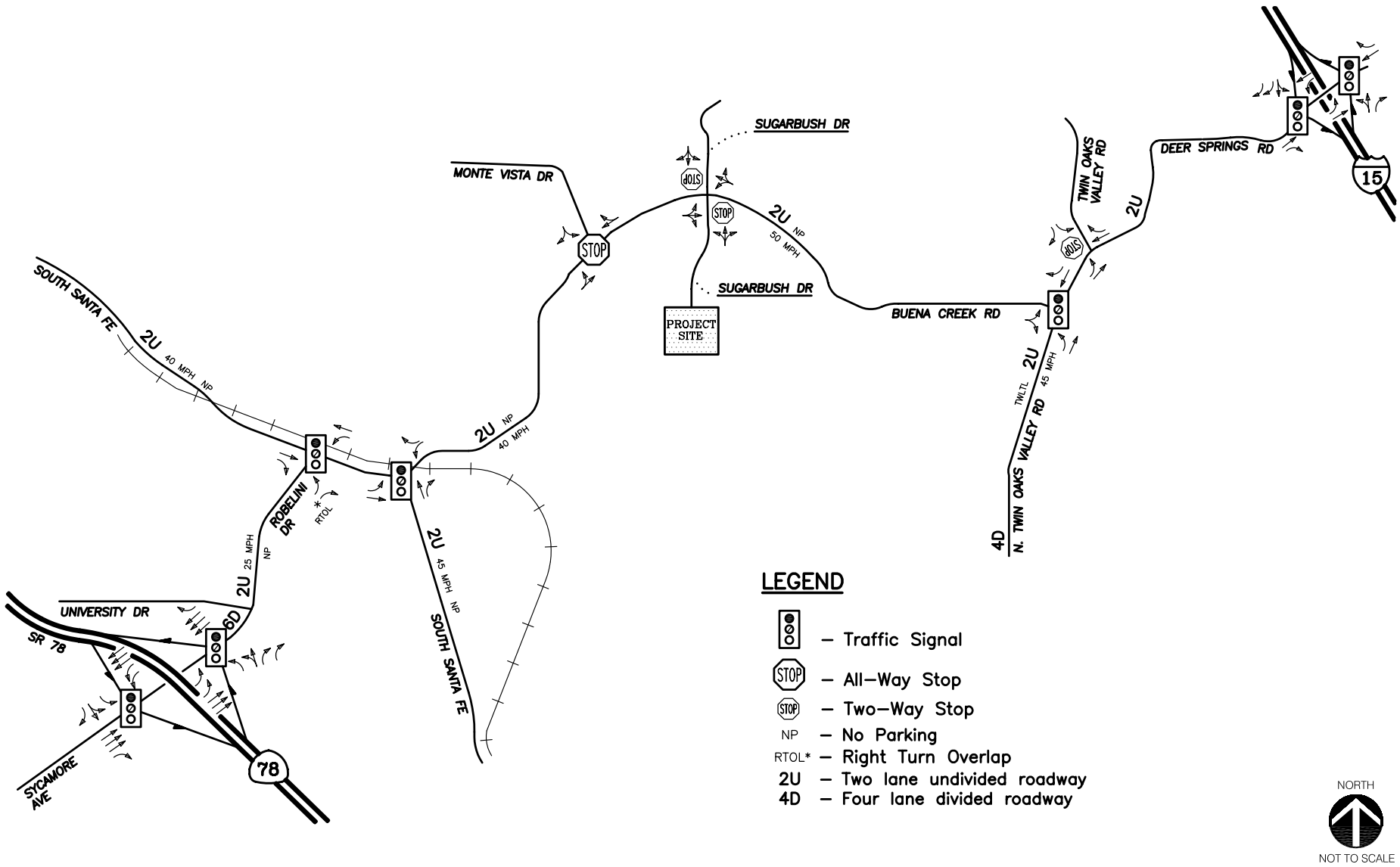
Table 2.4-10
TRAVEL TIME STUDY

	Length (mile)	Existing (AM/PM)				Existing + Project (No Improvements) (AM/PM)				Existing + Project (With Improvements) (AM/PM)			
		Segment Travel Time (min[a])	Delay (min)	Total Travel Time (min)	Traffic Volume	Segment Travel Time (min[a])	Delay (min)	Total Travel Time (min)	Traffic Volume	Segment Travel Time (min[a])	Delay (min)	Total Travel Time (min)	Traffic Volume
SOUTH SANTA FE ROAD – ROBELLINI DRIVE TO BUENA CREEK ROAD													
Eastbound South Santa Fe Avenue – Woodland Drive to Buena Creek Road													
S. Santa Fe Ave./Woodland Dr.		0.0/0.0	0.4/0.4	0.4/0.4		0.0/0.0	0.4/0.4	0.4/0.4		0.0/0.0	0.4/0.4	0.4/0.4	
EB S. Santa Fe Ave. – Woodland Dr. to Buena Creek Rd.	0.08	0.7/0.3	0.0/0.0	0.7/0.3	550/925	0.8/0.4	0.0/0.0	0.8/0.4	569/942	0.7/0.3	0.0/0.0	0.7/0.3	569/942
S. Santa Fe Ave./Buena Creek Rd.		0.0/0.0	0.3/0.4	0.3/0.4		0.0/0.0	0.3/0.4	0.3/0.4		0.0/0.0	0.3/0.5	0.3/0.5	
Total Travel Time					**1.37/1.11**				**1.49/1.16**				**1.35/1.18**
Westbound South Santa Fe Avenue – Woodland Drive to Buena Creek Road													
S. Santa Fe Ave./Woodland Dr.		0.0/0.0	0.4/0.4	0.4/0.4		0.0/0.0	0.4/0.4	0.4/0.4		0.0/0.0	0.4/0.4	0.4/0.4	
WB S. Santa Fe Ave. – Buena Creek Rd. to Woodland Dr.	0.08	0.4/0.5	0.0/0.0	0.4/0.5	626/868	0.5/0.6	0.0/0.0	0.5/0.6	639/875	0.4/0.5	0.0/0.0	0.4/0.5	639/875
S. Santa Fe Ave./Buena Creek Rd.		0.0/0.0	0.3/0.4	0.3/0.4		0.0/0.0	0.3/0.4	0.3/0.4		0.0/0.0	0.3/0.5	0.3/0.5	
Total Travel Time					**1.04/1.32**				**1.16/1.38**				**1.01/1.37**

Table 2.4-10 (cont.)
TRAVEL TIME STUDY

	Length (mile)	Existing (AM/PM)				Existing + Project (No Improvements) (AM/PM)				Existing + Project (With Improvements) (AM/PM)			
		Segment Travel Time (min[a])	Delay (min)	Total Travel Time (min)	Traffic Volume	Segment Travel Time (min[a])	Delay (min)	Total Travel Time (min)	Traffic Volume	Segment Travel Time (min[a])	Delay (min)	Total Travel Time (min)	Traffic Volume
ROBELLINI DRIVE – UNIVERSITY DRIVE TO SOUTH SANTA FE AVENUE													
Northbound Robellini Drive – University Drive to South Santa Fe Avenue													
Robellini Dr./University Dr.		0.0/0.0	0.4/0.6	0.4/0.6		0.0/0.0	0.4/0.6	0.4/0.6		0.0/0.0	0.4/0.4	0.4/0.4	
NB Robellini Dr. – University Dr. to S. Santa Fe Ave.	0.522	1.4/1.5	0.0/0.0	1.4/1.5	751/2246	1.4/1.6	0.0/0.0	1.4/1.6	757/2263	1.4/1.5	0.0/0.0	1.4/1.5	757/2263
Robellini Dr./S. Santa Fe Ave.		0.0/0.0	0.4/0.4	0.4/0.4		0.0/0.0	0.4/0.4	0.4/0.4		0.0/0.0	0.4/0.4	0.4/0.4	
Total Travel Time					**2.26/2.51**				**2.27/2.55**				**2.26/2.34**
Southbound Robellini Drive – University Drive to South Santa Fe Avenue													
Robellini Dr./University Dr.		0.0/0.0	0.4/0.6	0.4/0.6		0.0/0.0	0.4/0.6	0.4/0.6		0.0/0.0	0.4/0.6	0.4/0.6	
NB Robellini Dr. to S. Santa Fe Ave.	0.522	1.8/1.8	0.0/0.0	1.8/1.8	917/1225	1.9/1.9	0.0/0.0	1.9/1.9	930/1232	1.8/1.8	0.0/0.0	1.8/1.8	930/1232
Robellini Dr./S. Santa Fe Ave.		0.0/0.0	0.4/0.4	0.4/0.4		0.0/0.0	0.4/0.4	0.4/0.4		0.0/0.0	0.4/0.4	0.4/0.4	
Total Travel Time					**2.65/2.83**				**2.69/2.94**				**2.67/2.81**

a. Travel time methodology based on Chapter 15 (Urban Streets) and Chapter 16 (Signalized Intersections) of *Highway Capacity Manual 2000* (TRB 2000).



Source: LLG (2009)

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Existing Roadway Conditions

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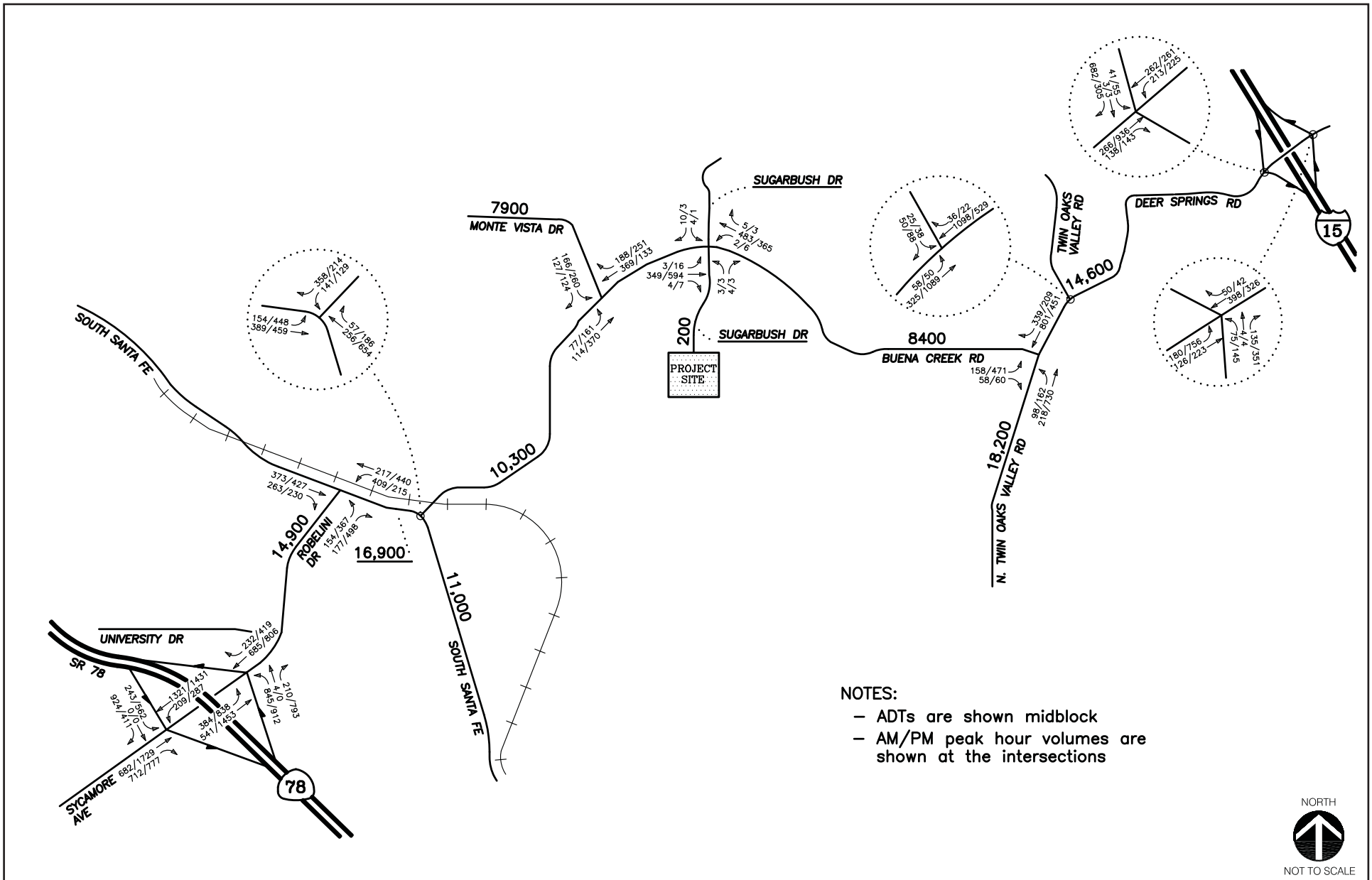
Figure 2.4-1



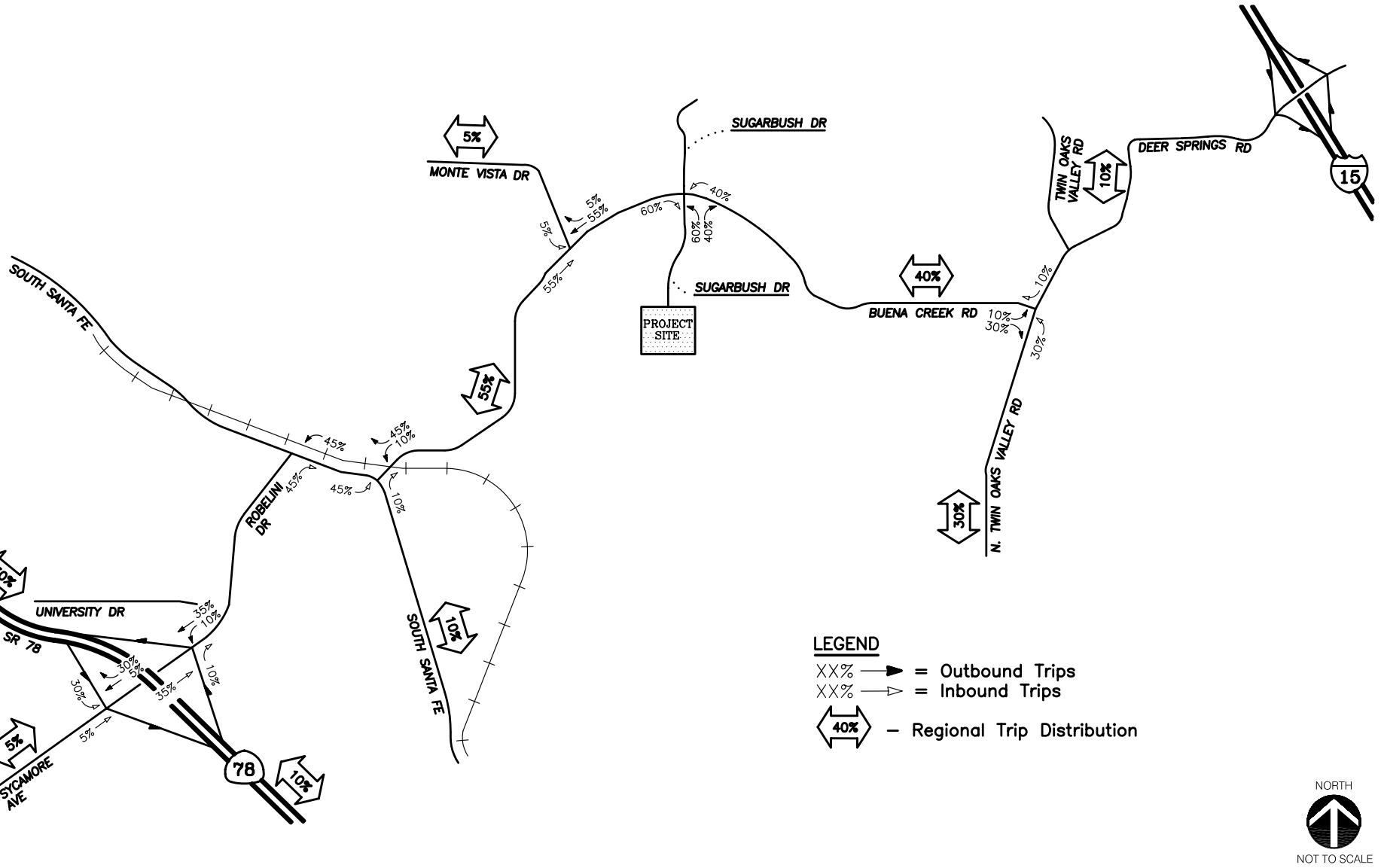
Source: LLG (2009)

I:\Gis\B\BOO-07 Vista\Map\ENV\EIR\Fig2-4-2_ExistingTrafficVolumes.indd -NM

Existing Traffic Volumes

SUGARBUSH RESIDENTIAL PROJECT

Figure 2.4-2



Source: LLG (2009)

I:\Gis\B\BOO-07 Vista\Map\ENV\EIR\Fig2-4-3_RegionalTraffic.indd -NM

Regional Traffic Distribution

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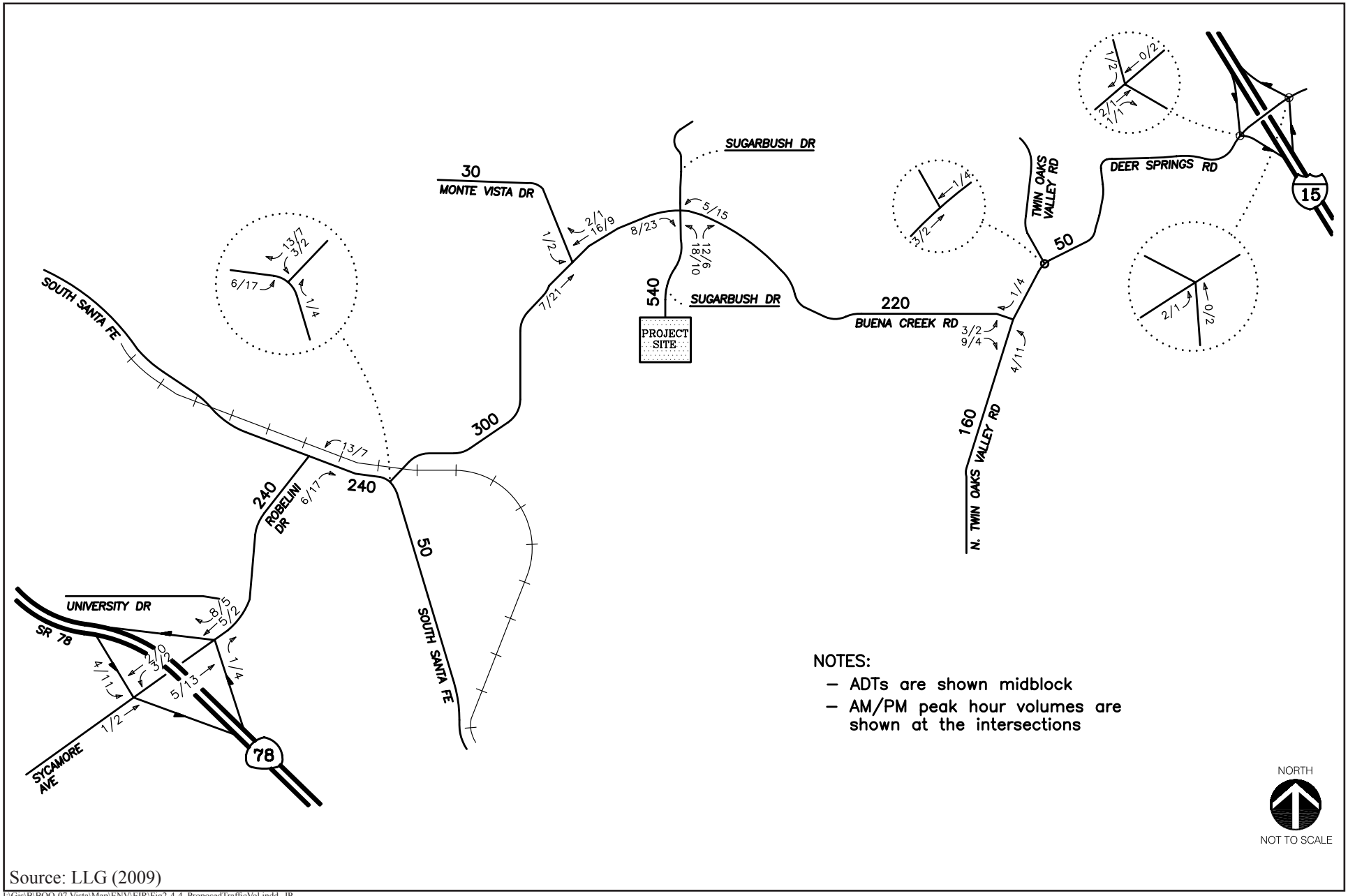
Figure 2.4-3



Source: LLG (2009)

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Proposed Project Traffic Volumes

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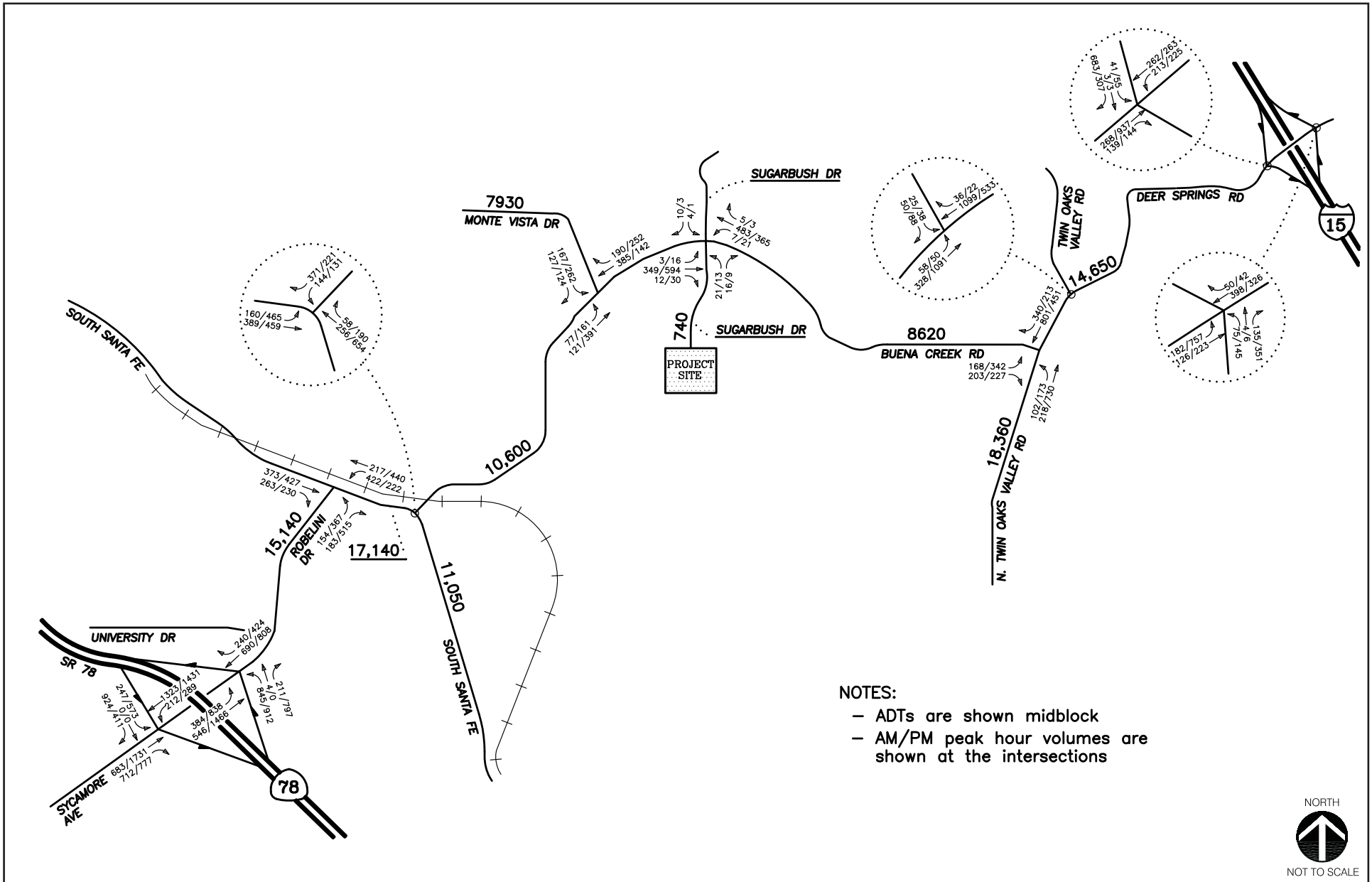
Figure 2.4-4



NOTES:
- ADTs are shown midblock
- AM/PM peak hour volumes are shown at the intersections

NORTH

NOT TO SCALE

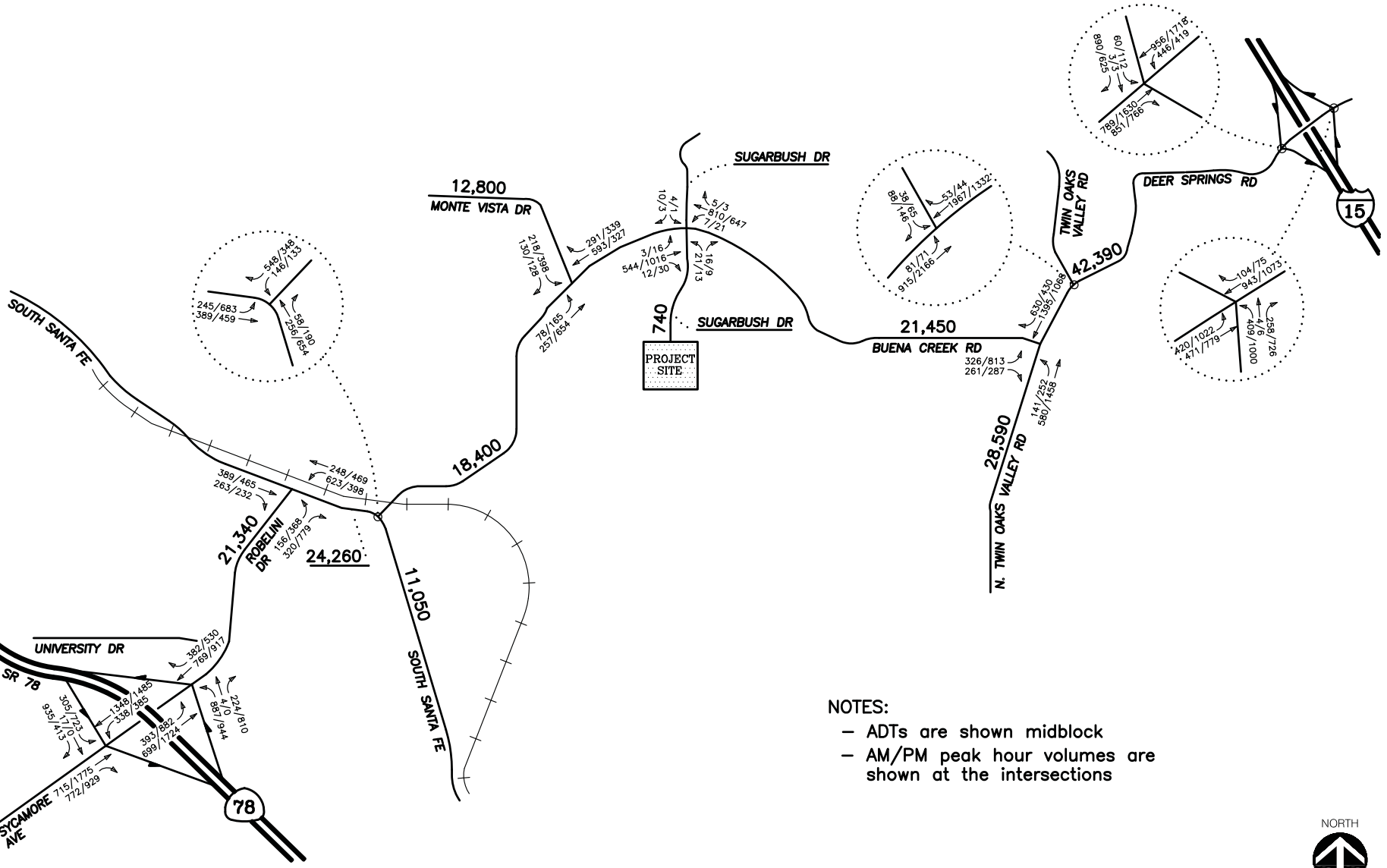
Source: LLG (2009)

I:\Gis\B\BOO-07 Vista\Map\ENV\EIR\Fig2-3-5_PlusTrafficVol.indd -NM

Existing Plus Project Traffic Volumes

SUGARBUSH RESIDENTIAL PROJECT

Figure 2.4-5



Source: LLG (2009)

I:\Gis\B\BOO-07 Vista\Map\ENV\EIR\Fig2-4-6_CumulativeTrafficVol.indd -NM

Existing Plus Project Plus Cumulative Traffic Volumes

SUGARBUSH RESIDENTIAL PROJECT

Figure 2.4-6